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Journal of the Society of Arts.

FRIDAY, AUGUST 2, 1861.

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INTERNATIONAL EXHIBITION OF 1862.

The Council beg to announce that the Guarantee Deed is now lying at the Society's House for signature, and they will be much obliged if those gentlemen who have given in their names as Guarantors, will make it convenient to call there and attach their signatures to the Document.

Her Majesty's Commissioners have appointed the following Committee, in addition to those already published :—

Class I. (Mining, Quarrying, Metallurgy, and Mineral Products) in the coming Exhibition :—Sir R. Murchison, D.C.L., F.R.S.; Professor Warrington Smyth, F.R.S.; Professor Percy, M.D., F.R.S.; Professor Ramsay, F.R.S.; Professor Maskelyne, F.R.S.; Hussey Vivian, Esq., M.P.; Samuel Blackwell, Esq.; Nicholas Wood, Esq.; Thomas Sopwith, Esq., F.R.S.; R. B. Grantham, Esq.; and J. Rawson Barker, Esq.

The following arrangements, in addition to those already published, have been made in Foreign Countries to represent the interests of intending Exhibitors :—

Italy.

The following are the Commissioners :—

President: The Marchese Gustavo Benso di Cavour, Deputy to National Parliament.
Sir James Hudson, K.C.B., British Minister.
Cav. Rodolpho Audinot, Deputy.
Commander Tomaso Corsi, Ministry of Agriculture, Industry, and Commerce.
Cav. Giulio Curioni, Member of Institution of Lombardy.
Commander Stefano Jacini, Deputy, Ministry of Public Works.
Cav. Giuseppe la Farina, Counsellor of State.
Count Antonio Nomis di Pollone, Senator, Vice-President of Chamber of Agriculture and Commerce of Turin.
Cav. Professor Raffaele Piria, Deputy.
Marchese Cosimo Ridolfi, Senator, President of the Royal Academy of Georgofili.
Doctor Antonio Salvagnoli-Marchetti, Deputy.
Gregorio Sella, Merchant and Manufacturer.
Marchese Vincenzo Torrearsa, Deputy.
Professor Pietro Torrigiani, Deputy.
The Secretary of the Ministry of Finance.
The Secretary of the Ministry of Public Works.
The Secretary of the Ministry of Marine.
The Secretary of the Ministry of Agriculture, Industry, and Commerce.
Cav. Guiseppe Devincenzi, Deputy, will act as Secretary.

NOTICE TO INSTITUTIONS.

The Secretaries of those Institutions whose Members intend to join (with their friends) in the Excursion to the Crystal Palace, on the 27th inst., are requested to communicate with the Secretary of the Society of Arts without delay, stating the number of persons likely to be present.

EXAMINATIONS, 1861.

Since the publication of the list of prizes awarded to candidates,* the attention of the Council has been drawn to the fact that William Craig, to whom was awarded the first prize in Latin and Roman History, is ineligible for a prize, being an undergraduate of the University of Glasgow. The prizes for that subject will be awarded thus :—

1st prize of £5 to No. 814—Frederic Reeves, aged 20, Messrs. Chance's Library, Birmingham, Glass-cutter.

2nd prize of £3 to No. 38—Richard Edward Gent Kirk, aged 17, London Mechanics' Institution, Messenger in H.M. Record Office.

The former was originally the second prizeman, and the latter is the candidate standing next in order of merit on the Examiner's list.

The prize of £5 originally awarded to the Glasgow Institution, will thus be transferred to Messrs. Chance's Library and Reading-room, Birmingham.

NEW FRENCH TARIFF IN CONNECTION WITH THE LINEN AND JUTE TRADES.

By Robert Sturrock, Secretary to the Dundee Chamber of Commerce.

I.—The Linen Trade.

In noticing the changes which had been made in France in the import duties on linens and linen yarns (*Journal*, Vol. IV., p. 532), it was shown that under moderate duties a large business had sprung up, whilst, on an opposite policy being adopted, a flourishing trade was almost annihilated. In 1836 the tariff was reduced, and in 1842 excessive duties, amounting almost to prohibition, were established. The result has been thus :—

Linen and Linen Yarn Trade with France.

Year.	Linens.	Linen Yarn.	Total.
1835	£61,612	£198,823	£260,435
1841	281,982	806,336	1,088,318
1859	68,753	89,371	158,114

Under the Commercial Treaty lately concluded between France and this country, the linen trade has again obtained great advantages, the new duties being in some cases even lower than they were in 1836. This will be more clearly seen by showing the changes which have been made at different periods. Table I. gives the duty on the various classes of linen yarns in 1836, 1842 and under the new tariff, and exhibits at present prices the effect of these duties on different sizes of yarns. The only change now made in the classification of the tariff of 1842 has been to add one class, making six in place of five, the finest yarns being now entered in the sixth.

Table No. II. exhibits the duty on the different classes of plain linen cloth. From 1836 up to the present time, there were ten classes, but these have now been reduced to seven, and are consequently simplified.

Whilst the linen trade between this country and France has fallen to the low point already stated, the opposite has been taking place in that particular industry in France fostered by prohibitive duties. In 1840 there were only 57,000 spindles employed in flax spinning; in 1853 they had increased to 395,800, and though no official accounts have been since published, it is probable that the number now at work is fully half a million.

It may be too much to expect, under altered circumstances, that this country is again to succeed to so large a trade within a like period; but the market is again open. There is now a large interest to oppose, and the spinners in France by the new tariff have likewise advantages in getting machinery, coals, &c., from England, which they have not previously enjoyed; an active competition will also have the effect of producing greater care in the management of details, and curtailing expenses generally. The opportunity of fair competition is now, however, given, and there is little doubt the importance of the business will be such as to benefit the producer here, and the consumer on the other side of the Channel.

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* See present vol. of *Journal*, p. 508.

II.—The Jute Trade.

During the period that the extensive trade was carried on in linens and linen yarns between the two countries, jute yarns and jute manufactures were, comparatively speaking, little known here—1136 tons only of raw jute having been imported into Dundee in 1838—(in 1860 about 40,000 tons) and jute was not even recognised in the French tariff. The duties latterly imposed on jute yarns were so excessive and inconsistent with the nature and value of the article, that they must have been fixed either in total ignorance of what was being treated with, or it had been the determination of the French Government to exclude foreign yarns entirely. Unlike linen yarns there was no classification whatever; all descriptions were charged the same amount of duty on a like weight, which was fixed at 60 francs per 100 kilogrammes, or £2 8s. for 221 lbs., being nearly 2¾d. per lb. English. It is unnecessary to say more as to the total prohibition which such a system produced, than to mention that during the last six months of 1859, which was the period fixed upon by the French Government as a basis for the price valuations in the new Tariff, the above duty would have amounted to about 100 per cent. on the price of yarns adapted for sacking warps, and about 150 per cent. on wefts for the same manufacture.

Table No. III. shows the extraordinary change which has been made in the tariff just adopted, yarns being now classified according to their quality and value.

If the arrangement of the duties in connection with jute yarns showed great ignorance, it must be confessed that that adopted for jute manufactures betrayed much more. They were divided into four classes, but with the exception of the first no pure jute manufacture existed which could be placed in them. The first class, which admitted cloth up to 32 porter, 7 threads in one-fifth of an inch, or in 5 millimetres, was more than sufficient for all practical purposes, and the duty charged on 100 kilogrammes was 77 francs, or £3 1s. 8d. on 221 lbs., being 3⅓d. per lb. English. Under such a duty, the total exclusion of jute manufactures from France was thoroughly obtained; from the great alteration, however, which has been brought about, an immediate change must take place, and the details in Table No. IV. will best show what has been done on this head for the jute trade. As with yarns, a proper and natural classification has been well arranged.

As jute goods mixed with any other material—when the jute predominates in weight—are allowed to be entered as

TABLE I.—Tariff Duties of Brown Linen Yarns in 1836, 1842, and 1860.

	Class 1.		2.		3.		4.		5.		6.	
	No. 9 and under.		No. 10 to 19.		No. 20 to 39.		No. 40 to 59.		No. 60 to 119.		No. 120 and upwards.	
	Per 100 kilos.	Per 221 lbs.	Per 100 kilos.	Per 221 lbs.	Per 100 kilos.	Per 221 lbs.	Per 100 kilos.	Per 221 lbs.	Per 100 kilos.	Per 221 lbs.	Per 100 kilos.	Per 221 lbs.
	Frc.	s. d.	Frc.	s. d.	Frc.	s. d.	Frc.	s. d.	Frc.	s. d.	Frc.	s. d.
1836	14	11 3	24	19 3	24	19 3	24	19 3	24	19 3	24	19 3
1842	38	30 5	48	38 5	80	64 0	125	100 0	165	132 0	165	132 0
New Duty............	15	12 0	20	16 0	30	24 0	36	28 10	60	48 0	100	80 0

Examples of Tariff Duties on Brown Linen Yarns in 1836, 1842, and 1860, taking present Prices.
4⅙ Spyndles = 1 English Bundle.

	Class 1.			2.			3.			4.			5.			6.		
	6 lbs.—No. 8.			3 lbs.—No. 16.			2 lbs.—No. 25.			1 lb.—No. 50.			½ lb.—No. 100.			¼ lb.—No. 200.		
	Price per sp.	Duty per sp.	Per cent.	Price per sp.	Duty per sp.	Per cent.	Price per sp.	Duty per sp.	Per cent.	Price per sp.	Duty per sp.	Per cent.	Price per sp.	Duty per sp.	Per cent.	Price per sp.	Duty per sp.	Per cent.
	s. d.	d.		s. d.	d.		s. d.	d.		s. d.	d.		s. d.	d.		s. d.	d.	
1836	2 8	3¾	11½	2 4	3¼	11½	2 0	2	8⅓	1 4	1	6¼	1 5¼	½	3	1 6¾	¼	1⅓
1842	2 8	10	31¼	2 4	6¼	22⅓	2 0	7	29¼	1 4	5½	34½	1 5¼	3½	20⅓	1 6¾	1¾	9⅓
New Duty.........	2 8	3⅞	11¾	2 4	2⅝	9⅓	2 0	2⅝	11	1 4	1½	9⅓	1 5¼	1⅓	7¾	1 6¾	1 1/12	5¾

TABLE II.—Tariff Duties on Unbleached Plain Linens, in 1836, 1842, and 1860—Quality fixed by the Number of Threads of Warp in 1-5th of an inch, or 5 millimetres.

	Class 1.		2.		3.		4.		5.		6.		7.	
	8 threads and under.		9 to 11 threads.		12 to 14 lbs.		15 to 17 threads		18 to 20 threads.		21 to 23 threads.		24 threads and upwards.	
	Per 100 kilos.	Per 221 lbs.	Per 100 kilos.	Per 221 lbs.	Per 100 kilos.	Per 221 lbs.	Per 100 kilos.	Per 221 lbs.	Per 100 kilos.	Per 221 lbs.	Per 100 kilos.	Per 221 lbs.	Per 100 kilos.	Per 221 lbs.
	Frc.	s. d	Frc.	s. d.	Frc.	s. d	Frc.	s. d.	Frc.	s. d.	Frc.	s. d.	Frc.	s. d.
1836	*33	26 5	65	52 0	*98	78 5	*142	113 7	*195	156 0	350	280 0	350	280 0
1842	*70	56 0	126	100 10	*172	137 7	*251	200 10	*320	256 0	467	373 7	467	373 7
New Duty...	30	24 0	55	44 0	90	72 0	115	92 0	170	136 0	260	208 0	400	320 0

* The average duty, the classification under these duties not being the same as now.

TABLE III.

Tariff Duties on Jute Yarn (Natural Colour).

	Class 1.		Class 2.		Class 3.		Class 4.		Class 5.	
	Heavier than 21 lbs. per sp. No. 2⅛.		21 lbs. to 8 lbs. No. 2⅛ to No. 6.		7 lbs. No. 7.		6 lbs. to 5 lbs., inclusive. No. 8 to No. 10.		4 lbs. to 2½ lbs. No. 12 to No. 19.	
	Per 100 kilos.	Per 221 lbs.	Per 100 kilos.	Per 221 lbs.	Per 100 kilos.	Per 221 lbs.	Per 100 kilos.	Per 221 lbs.	Per 100 kilos.	Per 221 lbs.
	Frc.	s. d.	Frc.	s. d.	Frc.	s. d.	Frc.	s. d.	Frc.	s. d.
Old Duty ……	60	48 0	60	48 0	60	48 0	60	48 0	60	48 0
New Duty ……	7	5 7	9·20	7 4	10·20	8 2	15	12 0	20	16 0

Examples of Tariff Duties on Jute Yarns—(Natural Colour)—Present Prices.
1 English Bundle = 4⅙ Spyndles.

	Class 1.			Class 2.			Class 3.			Class 4.			Class 5.		
	24 lbs. per sp. No. 2.			8½ lbs. No. 5⅜.			7 lbs. No. 7.			6 lbs. No. 8.			3 lbs. per sp. No. 16.		
	Price per sp	Duty per sp.	Per cent.	Price per sp.	Duty per sp.	Per cent.	Price per sp.	Duty per sp.	Per cent.	Price per sp.	Duty per sp.	Per cent.	Price per sp.	Duty per sp.	Per cent.
	s. d.	s. d.		s. d.	s. d.		s. d	s. d.		s. d.	s. d.		s. d.	s. d.	
Old Duty …	4 0	5 2¼	130	2 1½	1 9	82½	1 9	1 6¼	87	2 0	1 3½	65	1 9	0 7¾	37
New Duty …	4 0	0 7½	15½	2 1½	0 3½	13¾	1 9	0 3	14¼	2 0	0 4	16½	1 9	0 2⅝	12½

TABLE IV.

Duties on Pure Jute Goods—(Natural Colour)—Number of Threads of Warp in 1-5th of an Inch.

	Class 1.		Class 2.		Class 3.		Class 4.	
	Mending Bagging, Plain Sacking, Double Warp do., up to 14 por. 1, 2, and 3 threads.*		Twilled Sacking. 1, 2, and 3 threads.*		Hessians, &c., 4 and 5 threads, 15 to 22 porter.		6, 7, and 8 threads,† 23 to 36 porter.	
	Per 100 kilos.	Per 221 lbs.	Per 100 kilos.	Per 221 lbs.	Per 100 kilos	Per 221 lbs.	Per 100 kilos.	Per 221 lbs.
	Franc.	s. d.	Franc.	s. d.	Franc.	s. d.	Franc.	s. d.
Old Duty………	77	61 7	77	61 7	77	61 7	77	61 7
New Duty………	13	10 5	15	12 0	21	16 10	30	24 0

* In double warp cloth two threads are counted as one.
† In the old tariff the duty was under 8 threads, 77 fr., or 61s. 7d.; if 8 threads, 90 fr., or 72s.

Examples of Duties on Pure Jute Goods—(Natural Colour)—Present Prices.

	Class 1.												Class 2.			Class 3.					
	Mending Bagging.			Plain Sacking, 14 oz. per yard.			Double Warp Sacking, 14 oz. per yard.			Hessian 12 por. 40 in.			Twld. Sacking 1¼ lb. per yard.			Hessian, 16 por. 40 in., heavy.			Hessian, 18 por. 40 in.		
	Price per cwt.	Duty.	Per cent.	Price per cwt.	Duty.	Per cent.	Price per cwt.	Duty.	Per cent.	Price per cwt.	Duty.	Per cent.	Price per cwt.	Duty.	Per cent.	Price per cwt.	Duty.	Per cent.	Price per cwt.	Duty.	Per cent.
	s d.	s. d.		s. d.	s. d.		s. d.	s. d.		s. d.	s. d.		s. d.	s. d.		s. d.	s. d.		s. d.	s. d.	
Old Duty…	19 8	31 2	158½	29 4	31 2	106	30 8	31 2	102	42 0	31 2	75⅓	29 0	31 2	107	50 10	31 2	61¼	53 0	31 2	59
New Duty..	19 8	5 3	26¾	29 4	5 3	18	30 8	5 3	17⅛	42 0	5 3	12½	29 0	6 1	21	50 10	8 6	16⅝	53 0	8 6	16

pure jute fabrics, the following will afford instances as how some of this description will now be affected :—

Class.	Mixed.	lbs.	Cost.		Duty.			
			s.	d.	s.	d.		Per cent.
I.—40 in. 14 por.	Hessian	112	53	2	5	3	=	10
II.—25 „ 8 „	Salt Sac.	112	68	6	6	1	=	8⅞
II.—25 „ 14 „	do.	112	83	1	6	1	=	7⅓
III.—40 „ 20 „	Hessian	112	70	10	8	6	=	12
IV.—24 „ 32 „	Padding	112	124	5	12	2	=	9¾

The duties on jute carpeting have also been reduced from 107 francs (85s. 8d.) to 32 francs (25s. 7d.) per 100 kilogrammes, or 221 lbs. English.

It will be thus seen that a radical change has been effected in the French tariff, so far as the jute manufactures of this country are concerned, and that there is now nothing in the shape of excessive fiscal duties to prevent a large business being carried on between France and this country. It may be stated, also, that all the duties will be further reduced in 1864.

Jute spinning is of late introduction into France—the total number of spindles now in operation being only from 12,000 to 14,000—and great varieties of jute manufactures are not yet produced. The sackings generally used there are of a more expensive description than ours, and it should only require time to show the farmers and other consumers that they can be supplied with an article which will suit their purposes equally well, and which they may procure at a reduced cost. The same may be said as to packsheet, carpeting, and many other fabrics of a mixed description.

A very large trade with France sprung up previously, on an alteration being made in her fiscal laws, and there is little reason to doubt but this will again take place after our neighbours become acquainted with the uses and prices of jute manufactures.

There may be various opinions as to the antecedents and present intentions of the Emperor Napoleon, but all must be satisfied that a commercial treaty with England was a wise measure on his part. He cannot but see that the continuance of his dynasty greatly depends upon increasing the comforts and general happiness of his people; and, knowing how advantageously free trade has worked for this country, he must be convinced that closer and greater commercial relations will produce a bond of union and good feeling between France and England which can never be brought about by any political treaty.

French Duties on Linen Yarns and Linens, and on Jute Yarns and Jute Goods.

Linens.

	Unbleached.	Bleached or Dyed.	Unbleached.			Bleached or Dyed.		
	Per lb.	Per lb.	Per 100 kilos.	Per 221 lbs.		Per 100 kilos.	Per 221 lbs.	
PLAIN.	d.	d.	fr.	s.	d.	fr.	s.	d.
Under 37 porter (8 or less*)	1·31	1·74	30	24	0	40	32	0
37 to 49 porter (9, 10, and 11)	2·39	3 05	55	44	0	70	56	0
50 to 62 porter (12, 13, and 14)	3·91	5·23	90	72	0	120	96	0
63 to 75 porter (15, 16, and 17) ...	5·00	6·75	115	92	0	155	124	0
76 to 90 porter (18, 19, and 20)	7·40	10·01	170	136	0	230	184	0
91 to 100 porter (21, 22, and 23)	11·31	15·24	260	208	0	350	280	0
Above 100 porter (24 and above)	17·40	23 28	400	320	0	535	428	0
DRILLS, PLAIN OR FIGURED.								
Under 37 porter (8 or less)	1 52	2 05	35	28	0	47	37	7
37 to 49 porter (9, 10, and 11)	2·39	3·05	55	44	0	70	56	0
50 to 62 porter (12, 13, and 14)	3·91	5·23	90	72	0	120	96	0
Above 62 porter (15 and above)	5·00	6·75	115	92	0	155	124	0

* Number of threads of warp in 1-5 of an inch, or in 5 millimetres.

Linen Yarns.

	Unbleached.	Bleached or Dyed.	Unbleached.			Bleached or Dyed.		
	Per lb.	Per lb.	Per 100 kilos.	Per 221 lbs.		Per 100 kilos.	Per 221 lbs.	
	d.	d.	fr.	s.	d.	fr.	s.	d.
No. 9 lea and under	0·65	0·87	15	12	0	20	16	0
„ 10 lea to 19 lea	0·87	1·17	20	16	0	27	21	7
„ 20 „ 39 „	1·31	1·74	30	24	0	40	32	0
„ 40 „ 59 „	1·57	2·09	36	28	10	48	38	5
„ 60 „ 119 „	2·61	3·48	60	48	0	80	64	0
„ 120 lea and upwards	4·35	5·80	100	80	0	133	100	5

Yarns and tissues of flax or hemp, mixed with other materials, will pay the same duties as pure yarns and tissues of flax or hemp, provided that the flax or hemp predominates in weight.

Damasks, 16 per cent. *ad valorem.*

Articles made of flax or hemp, wholly or in part made up, such as waggon sheets, railway covers, linen sacks, &c., 15 per cent. *ad valorem.*

This will apply to all qualities of made-up linens, and to mixed fabrics in all cases where linen predominates in weight.

Linen Yarns.

		No. or Lea.		Unbleached. Per sp. D.		Bleached or Dyed. Per sp. D.
1 lb.	per sp.	50	=	1·57	...	2·09
1⅛	„	45	=	1·75	...	2·34
1¼	„	40	=	1·96	...	2·61
1⅜	„	35	=	1·80	...	2·39
1½	„	32	=	1·96	...	2·61
1⅝	„	30	=	2·12	...	2·83
1¾	„	28	=	2·29	...	3·05
2	„	25	=	2·62	...	3·48
2¼	„	22	=	2·95	...	3·91
2½	„	20	=	3·27	...	4·35
2¾	„	18	=	2·39	...	3·21
3	„	16	=	2.61	...	3·51
3½	„	14	=	3·05	...	4·10
4	„	12	=	3·48	...	4·68
5	„	10	=	4·35	...	5·85
6	„	8	=	3·90	...	5·22
7	„	7	=	4·55	...	6·09
8	„	6	=	5·20	...	6·96
9	„	—	=	5·85	...	7·83
10	„	5	=	6·50	...	8·70
11	„	—	=	7·15	...	9·57
12	„	4	=	7·80	...	10·44
13	„	—	=	8·45	...	11·31
14	„	—	=	9·10	...	12·18

4⅙ spls. = one English bundle.

Jute Cloth.

	Natural Colour.	Bleached or Dyed.	Natural Colour.			Bleached or Dyed.		
	Per lb.	Per lb.	Per 100 kilos.	Per 221 lbs.		Per 100 kilos.	Per 100 kilos.	
	d.	d.	fr.	s.	d.	fr.	fr.	
*Up to 14 porter plain (1, 2, 3†)	0·56	0·83	13	10	5	19	15	3
*Up to 14 porter twilled (1, 2, 3)	0·65	0·96	15	12	0	22	17	7
From 15 to 22 porter (4, 5) ...	0·91	1·31	21	16	10	30	24	0
From 23 to 36 porter (6, 7, 8)..	1·31	1·91	30	24	0	44	35	2

Above 36 porter—more than 8 threads—same as tissues of linen, according to the class.

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* In double warp cloth two threads are counted as one.

† Number of threads of warp in 1-5 of an inch, or in 5 millimetres.

Jute Yarns.

	Natural Colour.	Bleached or Dyed.	Natural Colour.				Bleached or Dyed.		
	Per lb.	Per lb.	Per 100 kilos.		Per 221 lbs.		Per 100 kilos.	Per 221 lbs.	
	d.	d.	fr.	c.	s.	d.	fr.	s.	d.
Heavier than 21 lbs.	0·31	0·43	7	0	5	7	10	8	0
21 lbs. to 8 lbs. inclusive	0·40	0·56	9	20	7	4	13	10	5
7 lbs.	0·44	0 65	10	20	8	2	15	12	0
6 lbs. to 5 lbs. inclusive	0·65	0 96	15	0	12	0	22	17	7

Finer than 5 lbs., for both unprepared and bleached or dyed, same class as linen yarns.

Carpets, rugs, and matting, per lb., 1·40d.—per 100 kilos., 32fr. = 25s. 7d.

Yarns and tissues of jute, mixed with other materials, in which jute predominates in weight, will pay the same duty as pure yarns and tissues of jute.

Mixed articles, wholly or in part made up, such as waggon sheets, railway covers, sacks, &c., provided the weight of the flax or tow yarns in them exceeds that of the jute, 15 per cent. *ad valorem.*

Yarns made from Manilla fibre and coir, 5 per cent. *ad valorem.*

Cloth made from Manilla fibre and coir, 10 per cent. *ad valorem.*

Jute Yarns.

	No. or Lea.	Natural Colour. Per sp. D.	Bleached or Dyed. Per sp. D.
3 lb. per sp.	16	2·61	3·51
4 ,,	12	3·48	4·68
5 ,,	10	3·25	4·80
6 ,,	8	3·90	5·76
7 ,,	7	3·08	4·55
8 ,,	6	3·20	4·48
8½ ,,	—	3·40	4·76
9 ,,	—	3·60	5·04
10 ,,	5	4·00	5·60
12 ,,	4	4·80	6·72
14 ,,	3½	5·60	7·84
16 ,,	3	6·40	8·96
18 ,,	—	7·20	10·08
20 ,,	2½	8·00	11·20
22 ,,	2¼	6·82	9·46
24 ,,	2	7·44	10·32
26 ,,	—	8·06	11·18
28 ,,	—	8·68	12·04
30 ,,	—	9·30	12·90
40 ,,	1¼	12·40	17·20
48 ,,	1	14·88	20·64

4⅙ spls. = one English bundle.

NEW SOUTH WALES AND THE EXHIBITION OF 1862.

The *Mechanics' Magazine* says:—"Two of the principal topics of conversation and debate among the inhabitants of New South Wales—and more especially of its capital—when the last mail left, were the best means of contributing to the Great Exhibition of next year, in London, and the designs for the new Parliament Houses to be erected in Sydney. With respect to the first, it is gratifying to find that the utmost unanimity of feeling existed, and that in the direction of having the colony fully and fairly represented, and its productive forces adequately demonstrated. It was emphatically urged that sufficient interest did not exist among the colonists in 1851 to make their contributions to the Hyde-park Palace of that date worthy of themselves or the occasion; and that they ought not to miss the opportunity which next year would present of remedying, as far as possible, the error. We must be permitted, also, to express a hope that these aspirations may be realised. Except in the matters of wool, tallow, and gold—their great staple products—the Australians were scarcely recognisable in the World's Fair in 1851; and yet there were many distinguishing features in connection with them which ought to have cast their reflex and left their impression among the host of attractions which immortalised that great display. During the last ten years the wealth, intelligence, and commerce of New South Wales and Victoria have advanced to a degree more than commensurate with that *decade* of their existence; and it is but fitting that the mother country should behold the tangible evidence of the well-doing of her children. That evidence may be, and we trust will be, furnished in the colonial courts of 1862. It should be shown, then, that besides the treasures which the fruitful earth yields to patient labour—besides those glittering and weighty nuggets which have excited the interest and the cupidity of the most remote inhabitants of the world—there are to be found in Australia other natural products, and specimens of art and handicraft, which are not unworthy of being represented in the New Temple of Manufacture, of Art, and of Science."

THE THAMES EMBANKMENT.

The Commissioners appointed to examine into plans for embanking the River Thames within the metropolis, so as to "provide with the greatest efficiency and economy for the relief of the most crowded streets, by the establishment of a new and spacious thoroughfare, for the improvement of the navigation of the river, and which will afford an opportunity of making the low level sewer without disturbing the Strand or Fleet-street, and also to report upon the cost and means of carrying the same into execution," have submitted to her Majesty the following conclusions and recommendations:—

"The nature of the inquiry entrusted to us was made known to the public by advertisement in the newspapers, and more than 50 designs were presented for our consideration. The main features of the majority of the plans are an embanked roadway on the north side of the river, and the formation of docks with the view to retain all the existing wharves; in others, railways in addition to the roadway and docks have been proposed; whilst in a few, a solid embankment and roadway without either docks or railways have been suggested.

"The wharf property between Westminster-bridge and the Temple-gardens is for the most part devoted to the coal trade. We find that great facilities are now afforded for the distribution of coal by the new system of unshipping in the docks into railway waggons, and by various depôts on the railways in and near the metropolis. We are of opinion that public convenience no longer necessitates the continuance either of the coal or any other trade in this immediate locality. We, therefore, think that it would not be expedient to construct and maintain docks for the sake of preserving the existing wharves between the points we have mentioned; whilst their removal will greatly simplify the formation of the embankment and add to the beauty of the river. The wharf property, however, between the Temple-gardens and Blackfriars-bridge cannot in our opinion be so treated; and that eastward of Blackfriars-bridge is so important in a commercial point of view, that we do not recommend any interference with it.

"Having regard to these and other considerations, we are of opinion that we shall best fulfil your Majesty's instructions and provide for the requirements of the public by establishing a spacious thoroughfare between Westminster-bridge and Blackfriars-bridge, by means of an embankment and roadway; and that the new thoroughfare thus created should be continued on eastward from Blackfriars-bridge by a new street, according to the line formerly laid down by Mr. Bunning, the City architect, from the west end of Earl-street across Cannon-street, to the Mansion-house. Without such a street, no relief whatever would be given to the crowded thoroughfares of Ludgate-hill, St. Paul's-churchyard, and Cheapside.

"The line of embankment at Westminster would coincide with the terrace of the Houses of Parliament, and from thence to Blackfriars-bridge would nearly follow the line laid down for the corporation of the City of London in 1841 by Mr. Walker, Captain Bullock, Mr. Saunders, and Mr. Leach. The general level of the embankment and road would be four feet above Trinity high water. The road would commence at Westminster by an easy descent opposite the clock tower, and be continued on, 100 feet in width, to the eastern boundary of the Temple-gardens; from this point the road would be reduced to 70 feet in width, and carried on a viaduct supported by piers of masonry, rising to the level of Blackfriars-bridge, so constructed as to leave a breadth of water for the convenience of the City gas-works and the adjoining wharves of about 70 or 80 feet. The spaces between the piers under the ascending road would be left available for barges to lie, and afford easy access to the water between this structure and the wharves.

"From Westminster-bridge to the eastern boundary of the Temple-gardens, the embankment—sustained by a river wall—would be solid in its whole breadth; which breadth opposite Richmond-terrace would be 220 feet from the existing river wall. At Hungerford it would be 320 feet from the existing wharf; at Somerset-house about 120 feet; and at the Temple about 220 feet. The plan accompanying the report sets forth the entire scheme.

"With respect to the appropriation of the reclaimed land, we would recommend that as so much of it as shall be in front of the Crown property—which will be about 120 feet in width in the narrowest part—should be laid out in ornamental gardens for the accommodation of the occupiers of the houses, and that the portion in front of the Temple-gardens, also about 120 feet wide, be placed at the disposal of the society to be dealt with in a similar manner. The other portions of the reclaimed land may either be kept open for the health and recreation of the public, or be applied to building purposes.

"We propose that communications should be made with the intended roadway from Whitehall, opposite the Horse Guards, and also from some of the streets in the Strand; and that a new street should be formed passing through the Savoy to Wellington-street. The frontages on these streets would offer eligible sites for building, as would also the inner frontage of the new road, if it should hereafter be thought fit so to utilize the ground. We, however, feel it our duty to recommend that while economy and utility in laying out and disposing of the ground should be kept in view, endeavours should be made to invest this new and conspicuous work with some elements of interest and beauty.

"For the improvement of the navigation we recommend that the existing shoals between Waterloo and Westminster bridges should be removed, due regard being had to the foundations of the former. Also that an uniform low-water channel of six feet in depth at ordinary spring tides, and 500 feet in width from the embankment wall, be secured, and thus the stream be more equalised in velocity. If at any future time any effect should be produced on the river from the diminution of its capacity for tidal water by reason of the embankment, arrangements may be made higher up the river by dredging, or by a tidal reservoir to compensate for the loss. The consideration, however, of this matter would naturally devolve on the conservators of the River Thames.

"The embankment and street we have proposed will afford an opportunity of making the low level sewer without disturbing the Strand or Fleet-street, and at the same time facilitate the construction of the sewer eastward of the embankment.

"We are not prepared to recommend the construction of an embankment on the Surrey shore at present; but if hereafter it should be thought desirable or necessary to embank any portion of it, the scheme we have proposed for the Middlesex side will not in any way interfere with it.

"With regard to that part of our instructions in which we are commanded by her Majesty 'to report on the costs and means of carrying the same into execution,' we beg to report that we estimate the cost of the land, making compensation, constructing the embankment and roadways, and also acquiring the property in the City for, and forming the new street to the Mansion-house, at £1,500,000. This amount, however, would be reduced should it be thought right to dispose of any of the reclaimed land on the bank of the river for building purposes.

"Parliament having appropriated the coal dues to provide for the outlay necessary for this great work, it only remains for us to express our opinion as to the 'means of carrying the same into execution.'

"Looking at the magnitude of the work, the important and varied interests, both public and private, which will be affected, and the urgent necessity for its early completion, we are of opinion that the control and management of the undertaking should be entrusted to a special commission, appointed by your Majesty, in order to ensure speedy and economical attainment of an object so much needed by the public, and affording so favourable an opportunity for the improvement of the river and adornment of the metropolis.

"Witness our hands and seals, this 22nd day of July, 1861.

"WILLIAM CUBITT.
JOSHUA JEBB.
DOUGLAS GALTON,
EDWARD BURSTAI.
HENRY A. HUNT.
JOHN ROBINSON M'CLEAN."

EXAMINATION PAPERS, 1861.

(*Continued from page* 637.)

The following are the Examination Papers set in the various subjects at the Society's Final Examinations, held in April and May last:—

CHEMISTRY.

THREE HOURS ALLOWED.

The candidate is not to answer more than three questions in each division.

1. A cubic foot of air was measured off at 80° F. and 31 inches barometric pressure. What will be its volume at 60° F. and 30 inches?

2. Describe the elementary bodies most nearly allied to chlorine in their properties. Also those most nearly allied to oxygen and nitrogen respectively.

3. How is a chemical compound distinguished from a mere mixture?

4. Describe the manufacture of oxalic acid, and its chief properties, especially the decomposition when it is heated with strong sulphuric acid, or with glycerine.

5. Describe the manufacture and purification of coal gas.

6. How is red phosphorus prepared? In what does it differ from the clear phosphorus?

Second Division.

1. Describe the properties and tests of antimony, and its distinctions from arsenic.

2. Describe and explain the smelting of copper. What impurities does that metal usually contain?

3. How is ammonia-alum manufactured? What are its uses?

4. How is the value of black oxide of manganese determined quantitatively?

5. Describe the manufacture and chief properties of ammonia.

6. What is the meaning of the word ammonium? Explain the constitution of salts containing it, and discuss the theory of their formation.

Third Division.

1. By what processes is glycerine prepared? Describe its composition and chief properties.
2. How is paraffin prepared from coal?
3. How are cotton fibres detected in wool?
4. Describe the formation of pure alcohol from sugar, and name the other products that are formed at the same time.
5. Describe the chief kinds of sugar, and their distinctive properties and tests.
6. How is fulminate of mercury prepared? What acids are isomeric with fulminic acid?

ANIMAL PHYSIOLOGY (IN RELATION TO HEALTH).

THREE HOURS ALLOWED.

The candidate should answer at least four of these questions, and include two of the questions numbered 3, 4, and 6.

1. Name any *four* of the elementary tissues of the animal body. Then describe any *one* of these,—giving an account of its microscopic structure, its chemical composition, its physical and vital properties, and the uses it serves in the animal economy.
2. Compare the movements of the knee and ankle-joints with those of the elbow and wrist. Describe the mechanism on which the differences in those movements respectively depend.
3. Give a short but methodical account of the phenomena which accompany muscular contraction,—noting especially the changes which occur and follow in the muscular fibre itself. Apply the knowledge thus educed to the answering of the following questions:—Why do the muscles tire? What are the effects on the muscles of over-exertion, of defective exercise, and of absolute inaction? Why is a due amount of exercise necessary to the healthy condition of the muscles?
4. What other parts of the body, besides the muscles, are benefited by muscular exercise? What are the benefits which they receive? Explain, in any one case you choose to select, the mode in which the benefit may be rationally accounted for.
5. What juices or secretions are added to the food during the process of digestion? Where are they so added? What are their respective actions on the food? How can we induce, as far as possible, their due admixture with the food, in proper quantity and quality?
6. What is the composition of atmospheric air? What are the various modifications produced in it by living animals, and what changes does it effect on them? Advance all the arguments you can in favour of the proposition, that man should breathe the purest possible air from the moment of his birth to that of his death,—by night as well as by day.
7. Enumerate the parts of the organ of hearing in fishes. Then mention in the order of their appearance, in reptiles, birds, and mammalia (including man), the parts which are successively added to produce an organ fitted for hearing in air, and the uses of those parts so far as we are acquainted with them.

BOTANY.

THREE HOURS ALLOWED.

The Candidate is expected to answer correctly six questions in Section I., and eight questions in Section II.; each answer in Nos. 11 *and* 12 *of the latter standing for one.*

Section I. (Vegetable Physiology.)

1. State the difference in structure between cellular tissue and woody fibre.
2. Describe the usual state of spiral vessels.
3. When plants are cut off from the action of light what is the consequence?
4. Explain the origin of roots.
5. By what means are roots enabled to perform the office belonging to them.
6. Describe the parts of any stamen as completely a you can.
7. Describe those of any pistil as completely as you can.
8. To what kind of elementary organs belong the following substances:—flax, hemp, cotton, and New Zealand Flax?

Section II. (Practical Botany.)

1. What is the difference between an umbel, a corymb, and a capitulum?
2. What do you understand by the terms flower and inflorescence?
3. Describe a dicotyledonous embryo.
4. What is albumen? And in what way does ruminated albumen differ from other kinds?
5. Name the three great classes into which the vegetable kingdom is divided and the sub-divisions of Exogens; also state in what manner they are known from each other.
6. How do Rosaceæ differ from Ranunculaceæ?
7. ,, Liliaceæ ,, Amaryllidaceæ?
8. ,, Graminaceæ ,, Cyperaceæ?
9. How is the genus Abies distinguished from Pinus?
10. How is Anthemis nobilis known from Matricaria chamomilla.
11. Name the four plants marked A, B, C, D, and state their natural orders.
12. Describe the plant A according to the forms given in "Descriptive Botany," chapter VII.

AGRICULTURE.

THREE HOURS ALLOWED.

I. Theory of Agriculture.

1. A piece of spongy platinum becomes red-hot in a jet of hydrogen gas, while a piece of solid platinum is unaffected by it. How does the experiment illustrate the fertilizing influence of tillage operations upon the soil?
2. Name the effects, beneficial and mischievous, which may follow the burning of the soil—well or ill-conducted.
3. Explain the increasing fertility of Great Britain, notwithstanding that its soil is annually washed by 3,000 tons or more of rain water per acre, which must carry much fertilizing matter off to waste. This you may do by enumerating the restorative or compensating influences at work in the case of any particular farm or field you know.
4. Explain the advantage of the covered home-stall —the advantage (*a*) of feeding animals, and (*b*) of making manure, under cover.
5. What are the advantages obtained by reducing green food to pulp and dry food to chaff, and mixing them before giving them in food to cattle?

II. Farm Practice.

1. In what circumstances is the "cultivator" or scarifier better than the plough as an implement of tillage?
2. Estimate the cost of steam cultivation, and describe the results of it in any case of which you know.
3. Name two or three rotations of crops in ordinary use, and state the circumstances under which they may severally be justifiable.
4. What is the best known remedy for the "finger and toe" disease of turnips—and how do you meet the case of land liable to the so-called "clover sickness."
5. Describe the ordinary cultivation of the wheat crop, stating the crops which it generally follows; naming the manures best adapted for it—describing some of the

best known varieties of the plant—and estimating the cost per acre of harvesting it by hand and by reaping machine, respectively.

6. Describe the cultivation of Kohl-rabi.

7. What methods of cultivation have been recommended as likely to diminish the liability of the potatoe crop to its "disease?"

8. Name some of the common artificial manures in use, the characteristic ingredients to which they respectively and principally owe their power, the crops to which they are severally best applied, and the quantity of each per acre that is ordinarily used in a dressing.

9. What quantity and kinds of food are you likely to give daily, during February or March, to an ox nearly ready for the butcher, and yielding probably eight or nine cwts. of beef?

10. What acreage of different crops (naming them) do you require on land of average quality to keep from year to year a flock of 300 ewes, selling their produce—the wether tegs fat (and weighing probably 20 to 25 lbs. a quarter) in early spring—and those of the ewe tegs not needed for the flock, along with the cull ewes about midsummer.

MINING AND METALLURGY.

THREE HOURS ALLOWED.

1. Give the formulæ of copper pyrites, malachite, red hæmatite and blende; state also in what localities, and under what circumstances, these minerals chiefly occur in Great Britain.

2. What are respectively the ordinary per centages of metal contained in copper, tin, lead, and iron ores, as prepared for the market in this country.

3. Describe the processes commonly employed for crushing and dressing copper ores in Cornwall.

4. What is the meaning of the word duty as applied to the pumping engine?

5. In what way are underground surveys conducted, and what are the instruments employed?

6. Give in detail the various processes employed for determining the commercial value of an ore containing lead, silver, and gold.

7. Name the important ores of zinc, and describe their metallurgic treatment by the Belgian process.

8. Describe the method of precipitating copper from cupreous solutions by means of scrap iron, and state the various chemical changes which take place during the operation.

9. Which is the most important ore of antimony, from whence is it chiefly derived, and how is it treated for the metal it affords?

10. Describe Pattinson's process for the desilverisation of lead.

POLITICAL AND SOCIAL ECONOMY.

THREE HOURS ALLOWED.

1. What are the different causes that determine the rate of wages, and which of them is the most essential?

2. What were the main objects and provisions of the Poor Law Act of Elizabeth? To what property did it apply, and have its provisions in this last respect been complied with?

3. What mischiefs was the Poor-Law Act of 1834 intended more especially to remedy? Has it been effectual for that purpose?

4. What, according to the last yearly return, was the whole amount expended in the relief of the poor in England and Wales, distinguishing out-door from in-door relief?

5. What are the colonial possessions of England, and their most important products.

The following are Optional.

1. What is meant by the colonial system? How did it operate? And to what extent has it been abandoned?

2. What are the advantages and disadvantages of union rating, as compared with rating by parishes?

3. What do you understand by equality of taxation?

4. In what way is the justice of a uniform rate of income-tax proved on the supposition of its permanence? and is the proof conclusive?

DOMESTIC ECONOMY.

THREE HOURS ALLOWED.

1. Explain what you understand by domestic economy, and enumerate under different heads what you think it embraces.

2. For the site of a house what soils are best? What soil is the worst? What aspects are best, and what aspect is the worst, and give your reasons for your opinion?

3. A man earns 30s. per week, and has a wife and three children; viz., a boy of 16 and two girls of 11 and 8 years old. What accommodation should his house contain?

4. Explain the importance of ventilation. In ventilating a room, should the fresh air be admitted near the floor or near the ceiling?

5. Explain why ill-ventilated and crowded cottages are prejudicial to health; and give any reasons or proofs of this from your own experience.

6. Describe the various causes which make a chimney smoke, and the modes by which you would endeavour to cure it.

7. Which is most conducive to health, an uniform or varied diet? Give reasons and illustrations of your answer.

8. Of the modes of cooking—roasting, baking, broiling, frying, boiling, stewing. Explain each process briefly, and state which is the most economical.

9. Give a receipt for making bread. What is the effect of adding to the flour either potatoes or rice?

10. Should green vegetables be boiled in much or little water? Should the water be hard or soft? If it is deficient in the right quality of hardness or softness, how can the effect be cured?

11. Which is the more digestible or nutritious, fresh meat or salted? Why?

12. How may water in which there is a great deal of chalk or lime, be softened without adding anything to it?

13. Candles and Soap. At what time of year should a stock be laid in? Why? What precautions are requisite in storing them?

14. Detail the weekly expenses of a family, consisting of a man earning 18s. per week, his wife and four children aged 4, 6, 8, and 12 years, for food, fuel and light.

15. What, in your opinion, is the fitting qualification of a good domestic servant, as cook, as housemaid, as servant of all work.

16. With regard to the economy of a household, what do you consider are the advantages or disadvantages of town over country; and in the purchase of articles of clothing, how do you understand the terms *cheap* or *dear*?

17. In household management, what is meant (1) by necessary, (2) by current, (3) by occasional, and (4) by contingent expenses, and what things does each embrace?

18. What rules would you lay down to provide for them according to the circumstances and condition of a family, and for adjusting your expenditure to your income? What school knowledge would help you in this?

19. In what way would you vary your diet and clothing according to the differences of climate, the seasons of the year, the nature of your employment, or whether in town or country, and exemplify what you say by the habits of different peoples?

20. What are the causes of such wide differences in

home comforts as we often see amongst those whose earnings and pecuniary means are the same?

21. What are the advantages to a family of paying ready money and never running into debt; and the disadvantages of not doing so. And explain the necessity of keeping an exact account of income and expenditure?

22. How is the domestic economy of the labourer or operative affected by having part of his wages on a truck system, such as a dwelling rent-free; drink, as in the cider counties, as a part of wages throughout the year, or any other article of food on truck?

23. Do you consider a club for particular purposes, such us clothing, fuel, &c., when an equal or large proportionate sum is contributed by charitable people, beneficial or the contrary to the labouring classes?

24. What, in your opinion, is the best mode of disposing of small weekly or monthly savings, having regard to good security as well as interest?

25. Show how those who have to live by the labour of the hands or of the head—the industrial classes—can turn to best account casual intervals of time, not employed in their ordinary work (such as the long nights in winter,) as regards the economy and happiness of their homes.

26. Write your opinion on the influence which good household management has on the happiness of a family, and of the misery sure to arise from the contrary.

(*To be continued.*)

EXTRACTS FROM THE REPORTS OF H.B.M. CONSULS.

(*Continued from page* 634.)

Zanzibar.—The soil of Zanzibar is very rich, and peculiarly favourable to the cultivation of the clove tree, and supplies cloves in great abundance. The sugar cane grown at Zanzibar is of the very finest description. The late Imaum at one time worked his plantation well, and produced good sugar from a mill which was furnished with a steam-engine of English manufacture; but the engineers employed in working it all died, the engines got out of order, and no sugar has since been made on the island. Mr. Consul Sunley has commenced on the south side of the island, at a place called Pamoni, a very flourishing plantation of sugar, which grows luxuriously at Johana. Here I found a good anchorage for the *Castor*, and close by a harbour of deep water, formed by the coral reefs, where a three-decker might take refuge with safety.

Silk (Egyptian).—The large quantity of silk from the Barbary towns on the Mediterranean coast, or from any countries producing silk in Egyptian territory, is used at Illorin to mix with cotton in the superior cloths manufactured at that town, which have long been celebrated throughout Youraba and neighbouring countries for their softness and the gloss imparted by the silk; they are very expensive, and only chiefs, and others possessing wealth, can afford to purchase them. British manufactured goods find their way from one market town to another till they reach a kind of emporium at Illorin, from whence they are carried across the Niger into the heart of Africa. Rabba, or its immediate neighbourhood, would therefore be a very desirable site for commercial establishments connected with others at the confluence, and the safety of communication and travelling over land from Rabba to Lagos, which has now been established, would be found a great advantage.

Produce at Rabba.—Rabba is to be re-built very soon. If a permanent peace be established, the trade of that place will, in the course of a few years, surpass all your expectations; the yams are the finest we have ever seen, some weighing 45lbs., as white as flour, and as sweet almost as a potato. Dawa gero, mawa, and Indian corn are grown abundantly, and furnish—with yams, fish, and palm oil—the chief food of the people. I shall take you down specimens of the three first-named grains. Plantains, bananas, and popoys are the only fruit we get, and these are scarce.

The Republic of Liberia: its Products, Imports, and Exports.—From the swampy nature of the coast, timber is not to be found in the neighbouring settlements, but the elevated portions of the territory seem rich in gums and indigo. Timber of a superior quality and beautiful grain, and suitable for furniture, abound near the heads of the main river.

Its spontaneous productions—coffee, cotton, rice, pepper, palm oil, camwood, cassava, ginger, and arrowroot, need the attention of the husbandman. Only by agriculture can the Republic of Liberia become permanently important.

The imports into the Republic are cotton goods, earthenware, ironware, tobacco, spirits, provisions, powder, salt, wearing apparel, lumber, and miscellaneous articles, and (excepting tobacco, provisions, powder, and lumber, which arrive from the United States of America), are mainly of British manufacture.

The most important of the aforesaid are cotton fabrics, iron pots, iron bars, muskets, swords, hatchets, spear knives, brass kettles, brass rods, tobacco, spirits, and provisions.

The exports from the Republic are palm oil, camwood, ivory, and occasionally specie, of which the most important is the first-named produce.

All machinery, scientific instruments, books, horticultural and agricultural implements, seeds, specimens, and materials of every description used for the erection of school-houses or colleges are free of duty.

Diamonds.—In the official statistical report of the value of produce exported from Bahia, Brazil, an amount is included not exceeding £150,000, whereas an amount superior to £500,000 worth of this precious stone is clandestinely sent out of the country yearly. The discovery of the diamond mines in the district of Paraguassú, in the year 1845, has effected great and beneficial results to the population and commerce. What was in that year but a desert, is now one of the most flourishing districts, inhabited by a laborious and daily-increasing population. The town of Isabel de Paraguassú and neighbourhood contains 60,000 souls; that of Lençoés, 30,000; and Andarahy, 20,000—all the result of this discovery; and it may truly be said that those mines have realised for the poorer population of the interior, the same good we have observed in California and Australia. It has opened a large field to all, without dependence on professional skill or capital, of which the majority were not possessed; and in a moral sense has operated wonders in reclaiming the vicious from habits of indolence and crime. These men, finding in the extraction of diamonds an advantageous profit, naturally became large consumers of the produce of the country, which, for the want of a market, was not cultivated; and altering their habits of life, increased their well-being, and eventually made them consumers of the produce of foreign countries. The town of St. Isabel de Paraguassú is now the chief depôt of the trade of the north-west of this province, and supplies all the interior populations with the comforts of European civilisation, a population calculated at no less than 700,000 souls. In the neighbourhood of St. Isabel the cotton plant flourishes, and nitrate of soda is found—but the great difficulty to the exportation of these valuable products is the want of a good road to this port. Last year I used all my influence and endeavours with the late President to promote the passing of a law in the Assembly, guaranteeing five per cent. on the capital expended in the construction of a good carriage road. The law was passed and duly sanctioned by the late President, but, unfortunately, that law has been revoked. To give an idea of the importance of the road in question, it is enough to state that goods (foreign) to the value of £600,000 to £1,000,000 sterling are annually sent to the diamond district from this city, and that its exports in diamonds average between £600,000 to £800,000 per annum; no calculation being possible of the value of cotton, nitrate of soda, hides, skins, cattle, iron, &c., &c., that would be sent down, had the road I had so strongly recommended been carried into execution.

Nitrate of Soda.—Nitrate of Soda in the neighbourhood of the River San Francisco, Bahia, Brazil:—I have the honour to acknowledge the receipt of your lordship's despatch of January 7 last, instructing me to report, after a careful inquiry, on the localities in which nitrate of soda has been found in this province, its state of purity, the cost of extracting and refining it, and the expense of transport to a shipping port. In reply I beg to state that ever since the mention made in my Commercial Report for the year 1856 of the discovery of this important manure in this province I have received undoubted information of its existence in several other localities, and in consequence lost no time in renewing my exertions, with the assistance of a few friends having connexions in the interior, to obtain every information possible thereon. The information received from several districts is such as to satisfy my most sanguine expectations, especially in the north-east of this province, in the neighbourhood of the River St. Francisco, at a place called "Salitre." In the words of a most distinguished and talented native of the town of Joazeiro, through a valley of sixteen to twenty leagues long, one mass of nitrate of soda is found; in some places on the surface, at others a few feet under; and it contains sufficient manure for exportation for years to come. On the opposite side of the above-named river, near the town of Pilao-Arcado, other deposits exist in equal quantities.

The projected Bahia railroad to the town of Joazeiro must pass through the first-named district, but those magnificent deposits will only become available when that railroad reaches the St. Francisco.

In the interest of the company and of commerce it is ardently to be desired that its works should be commenced and prosecuted with vigour, as the distance is only 240 miles from this city.

(*To be continued.*)

Home Correspondence.

CHARCOAL AIR-FILTERS.

Sir,—Not having read the *Journal of the Society of Arts* of the 19th, until to-day, I have not had an opportunity to reply to Dr. Stenhouse's letter appearing in that number.

Dr. Stenhouse now says, he maintains "that the arrangement made by me at Windsor, in 1849, was not an air-filter at all." He says it was "a quantity of charcoal heaped up against a wall;" that it is clear the effluvia issuing from the cesspool could not pass through, as the wall would effectually prevent that; and that had I covered the cesspool with wire gauze, and then placed a layer of charcoal on it, so as to compel all the gases to pass through, that would be a charcoal air-filter.

I confess I cannot comprehend why a charcoal air-filter is less an air-filter because the body of charcoal, through which the gases pass is held in position vertically rather than horizontally. But if the learned doctor's present position be true, his "charcoal respirators" are fallacies. The charcoal used at Windsor was situated as the charcoal is in the respirators, namely, vertically.

The editor of the Windsor paper says (and be it recollected it is his statement, not mine), "that I placed a comparatively small quantity of peat charcoal, accurately granulated, resembling gunpowder (that is, common powder, in large grains), so as to intercept the gases as they rose." That "the vitiated air passed through the wall" (which Dr. Stenhouse says "would have been effectually prevented by the charcoal), and blackened the paint of the doors;" and "that after the charcoal was placed in its position, it was felt as if there was a cool breeze in the house." Yet, according to Doctor Stenhouse, such an arrangement was not an air-filter. It is tolerably evident, however, that the air was perfectly purified.

The simple fact is, I placed the charcoal in the exact position necessary to intercept the fresh air as it entered the room, and, as the gases flowed through the interstices or vacancies between each grain, "accurately granulated," they were absorbed and oxidised. Precisely in the same manner the operation is effected in my process of filtering sewage water. The gases afloat are compelled to pass through granulated charcoal, and oxidation takes place. The same effect was produced during my public experiments at the London Mechanics' Institution, in October, 1849. I forced night soil into contact with granulated peat charcoal, by passing both together through a machine which brought them into intimate admixture, and within two minutes the gases were absorbed and oxidised.

If oxidation be not the action in all these instances, perhaps Dr. Stenhouse will explain what else it is. But if it is so, he will then be good enough to explain why he claims in 1854 and 1861, the discovery of facts which I promulgated in 1849.

As regards "publication" of these facts, he will only have to refer to several pamphlets, &c., issued by the Amelioration Society, which he admits he has already read.

If I prepared peat charcoal to produce these effects publicly in 1849, surely it was no discovery of Dr. Stenhouse in 1854, that air could be purified by means of charcoal. It is perfectly well known that at my lectures at the Mechanics' Institution, in 1849, and at the Royal Dublin Society, I exhibited fully explanatory diagrams of my "Peat Charcoal Filters" and "Effluvia Traps," as well as all the other means which I proposed for the sanitary improvement of towns by peat charcoal.

The following descriptions I now extract from one of the publications on the subject:—

"The Patent Peat Charcoal Effluvia Trap, for preventing the escape of odour from Sewers."

"The Patent Peat Charcoal Purifying Vase, for totally absorbing fœtid air in crowded apartments or sick rooms. Its effect is almost immediate in drawing to it the emanations from large assemblies of people, either in workshops or otherwise."

And let me now say that the purifying vase described, when made in due proportion to the area to be purified, and the peat charcoal properly prepared, will, solely because of the affinity which exists between the impure gases of the atmosphere and the peat charcoal, draw to itself those impurities without any other than the natural compulsion of that affinity. There is no need, as Dr. Stenhouse says, to "compel" them by other means.

I beg leave to send you herewith a copy of *The Sanitary Journal* of Dublin, which alludes to Dr. Stenhouse's statements when they first appeared in 1854; and I call upon that gentleman to point out any publication where the special uses and applications of charcoal for the purposes now under consideration were named by any one. It has nothing to do with the question to say that "Charcoal has been always described as possessing antiseptic properties, as may be seen by reference to any of the systems of chemistry." Every schoolboy almost knows that fact. But although every school girl was aware of the power which blew the lid off the tea kettle, it was long before science discovered how to apply that power.

I am, &c.,
JASPER W. ROGERS.

Peat House, Robertstown, Co. Kildare,
29th July, 1861.

Proceedings of Institutions.

Sherwood Mutual Improvement Society.—The eighth annual report of the committee states that the members show by their attendance that they highly appreciate the advantages offered by the Institution's reading-room, which is now supplied with four daily and three weekly newspapers, and four weekly and two monthly periodicals. Five lectures were delivered during the last winter season, and a musical entertainment was given, the performers being entirely the members of the vocal music class and the Sherwood band. The entertainment gave great satisfaction to the members of the society, of whom and their friends over 500 were present. During the past year forty-nine volumes of attractive literature have been added to the library, making altogether the number of books in the library one thousand and forty-six. The books lent to the members during the year numbers 1,676, of which there were, of arts and sciences, 55; biography, 100; divinity, 22; history, 87; moral and descriptive, 105; natural history, 46; poetry and drama, 48; tales and novels, 786; voyages and travels, 44; miscellaneous, 383. A drawing class was established last autumn by the committee, and is still satisfactorily carried on. The music classes, both vocal and instrumental, also give great satisfaction. Mr. G. Payne has kindly placed in the charge of the Institution the photographic apparatus formerly belonging to the philosophical class, and now any member who wishes to study the science of photography can have the use of the apparatus. The balance sheet shows that the receipts have amounted to £199 10s. 0d., and that there is a balance in hand of £23 19s. 2d.

PARLIAMENTARY REPORTS.

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SESSIONAL PRINTED PAPERS.

Par.
Num.

Delivered on 4th July, 1861.

351. East India (Mr. Reilly)—Return.
388. Post Office (Irish Mails)—Returns.
390. Caledonian Canal—Fifty-sixth Report of the Commissioners.
392. Army Prize Money—Account.
201. Bills—Cruelty to Animals Prevention (No. 2).
215. „ —Roads and Bridges (Scotland) (as amended by the Select Committee).
220. „ —Edinburgh University.
Redemption of the Stade Toll—Treaty and Protocols.
Turkey (Establishment of a Telegraphic Cable between Malta and Alexandria)—Convention.

Delivered on 5th July, 1861.

221. Bill—University Elections (as amended by the Select Committee and in Committee).
Statistical Tables relating to Foreign Countries, Part 7.

Delivered on 6th and 8th July, 1861.

389. Leinster Tolls, &c.—Return.
394. Mr. Saxe Bannister—Papers.
396. Westminster Bridge, &c.—Returns.
401. Colonel Keogh's Petition—Report from Committee.
371. Steam Vessels—Return.
369. Education—Return.
377. Metropolitan Board of Works—Returns.
385. Merchant Seamen's Fund—Account.
386. Seamen's Savings Banks—Account.
387. Mercantile Marine Fund—Account.
397. Army (Effectives, &c.)—Returns.
405. Cunard, &c., Companies—Return.
406. Naval Reserve—Return.
407. Civil Services—Supplementary Estimate, Class 7.
366. Army (Medical Statistics, &c.)—Report.
216. Bills—Landed Estates (Ireland) Act (1858) Amendment.
217. „ —Landlord and Tenant Law Amendment (Ireland) Act Proceedings.
218. „ —Drunkenness (Ireland).
223. „ —Lunacy Regulation.
224. „ —East India (Civil Service) (as amended in Committee and on Re-commitment).
229. „ —Salmon Fisheries (Scotland, &c.) (as amended by the Select Committee).
225. „ —Turnpike Acts Continuance.
226. „ —Turnpike Trusts Arrangements.

Delivered on 9th July, 1861.

378. Civil List Pensions—Return
219. Bills—Markets and Fairs (Ireland) (as amended by the Select Committee).
227. „ Conjugal Rights (Scotland).
228. „ Trustees (Scotland).

Delivered on 10th July, 1861.

395. Mail Steamers (North America)—Return.
399. National Portrait Gallery—Return.
402 Public Income and Expenditure—Return.
403. Licensing System (Scotland)—Paper.
413. Railway and Canal Bills—Tenth Report from the General Committee.
230. Bills—Officers of Reserve (Royal Navy).
231. „ —Portpatrick Harbour (Scotland).
232. „ —Naval Medical Supplemental Fund Society (as amended by the Select Committee).
Cambridge University Commission—Report.

Delivered on 11th July, 1861.

384. Metropolitan Board of Works—Return.
401. Colonel Keogh's Petition—Report from Committee and Minutes of Evidence.
233. Bills—Salmon and Trout Fisheries (as amended by the Select Committee).
236. „ —County Voters (Scotland) (as amended in Committee and on Re-commitment).

Delivered on 12th July, 1861.

411. Navy (Boats)—Return.
415. Education (Building Grants)—Return.
417. Westminster New Palace—Returns.
418. Public Accounts—Third Report from Committee.
419. Public Income and Expenditure—Account.
374 East India (Army Medical Department)—Return.
234. Bill—Drainage of Land (as amended by the Select Committee).
Public General Acts—Caps 21, 22, 23, 24, 25, 26, and 27.

Delivered on 13th and 15th July, 1861.

323. Public Accounts—First Report and Minutes of Evidence, &c.
423. Colonial Military Expenditure—Report from Committee.
400. Ramsgate Harbour—Abstract of Accounts.
416. Maynooth College—Paper.
420. Civil List Pensions—Paper.
421. Reformatory Schools (Ireland)—Return.
265. East India (Moral and Material Progress and Condition)—Paper.
242. Bills—Births, Deaths, and Marriages (Ireland) (as amended by the Select Committee).
237. „ —Grand Juries (Ireland).
239. „ —Dublin Revising Barristers.
240. „ —Lunatic Asylums (Ireland) Act Continuance.
241. „ —County Cess (Ireland) Act Continuance.
243. „ —Parochial and Burgh Schools (Scotland) (No. 2) (amended).
244. „ —Pensions, British Forces (India).
245. „ —Public Works and Harbours.
246. „ —Lord Clerk Register Salary Abolition (Scotland).
247. „ —Enlistment in India.

Delivered on 16th July, 1861.

412. Supply Votes Cancelled—Return.
248. Bills—Courts of Justice Building Act (Money) (as amended by the Select Committee).
238. „ —Prosecutions Expenses.
Southern Italy—Papers.

Delivered on 17th July, 1861.

379. Canada Grand Trunk Railway—Return.
409. East India (Covenanted Civil Service)—Return.
414. Naval Medical Supplemental Fund Society Bill—Minutes of Evidence.
235. Bills—Rails (Highways and Streets).
249. „ —Metropolitan Gas Act Amendment.
250. „ —Ordnance Survey Continuance.

Delivered on 18th July, 1861.

424. Markets (Ireland) Bill—Report from Committee.
430. Post Office (Canadian Mails)—Return.

PATENT LAW AMENDMENT ACT.

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APPLICATIONS FOR PATENTS AND PROTECTION ALLOWED.

[*From Gazette, July 26th*, 1861.]

Dated 21st March, 1861.

710. W. Andrews, Woburn-chambers, Henrietta-street, Strand—Imp. in insulators for telegraph wires.

Dated 13th April, 1861.

918. J. Wright, 42, Bridge-street, Blackfriars—Imp. in the mode of manufacturing and designing postage letter paper, postage envelopes for letters, and postage wrappers or covers for newspapers and other printed matter. (A com.)

Dated 17th June, 1861.

1544. S. R. Smith, Dover—A new or improved steam boiler.

Dated 18*th June*, 1861.

1560. W. Fleming, Edinburgh—Imp. in machinery or apparatus for manufacturing snuff.
1562. A. W. Gibson, Belfast—Imp. in mills for the manufacture of barley and rice.

Dated 19*th June*, 1861.

1572. J. Louch, 69, Fenchurch street—Imp. in furnaces, boilers, and condensers of steam engines, part of such imps. being applicable to other purposes.

Dated 26*th June*, 1861.

1640. J. Cowan, Barnes, Surrey—Imp. in apparatus for reburning animal charcoal.

Dated 3*rd July*, 1861.

1685. R. Richardson, 26, Great George-street, Westminster—An improved railway chair for railways.
1687. J. Woollatt, Preston—Imp. in looms.
1689. J. Bennie and W. Moffat, Johnstone, Renfrew, N.B.—Imp in the manufacture of heels, clog irons, horse shoes, chain links, and similar articles, and in apparatus therefor.
1691. C. Gilfoy, Southampton—Improved means of resisting and extinguishing fire in buildings or on board ship
1695. P. Spence, Newton-heath, near Manchester—Imp. in economizing the manufacture of sulphuric acid, and in obtaining copper from ores used in such manufacture.

Dated 4*th July*, 1861.

1697. J. Patterson, Beverley, Yorkshire—Imp. in machinery for applying the power of horses or other animals to drive mills or other machines.
1699. R. Mills, Bury, Lancashire—Imp. in washing, wringing, and mangling machines.
1700. M. Gale, Glasgow, and T. Kennedy, Kilmarnock—Imp. in taps or valves.
1701. W. H. Ludford, Staveley, Derbyshire—An imp. or imps. in the manufacture of brooms and scrubbing brushes.
1703. J. Webster, 64A, Gloucester-street, Pimlico—Imp. in compositions used for lubricating railway and other axles.
1704. T. Wilson and J. G. Tatters, Felling, near Gateshead-on-Tyne—Imp. in treating tank refuse or soda waste.
1706. B. G. Sloper, Hackney—An improved method of and machinery for amalgamating and for effecting the separation of gold from earthy and other matters containing the same.

Dated 5*th July*, 1861.

1707. B. Fowler, jun., Liverpool—An improved sewer and sink trap.
1708. J. Hutson, Richmond—Imp. in cornices, laths, and panels, for bedsteads and other articles of furniture.
1709. G. Williams, Dursley, Gloucestershire—An improved mixture or liquid for extinguishing fire, applicable also for preparing or saturating various kinds of materials and fabrics for the purpose of rendering the same non-inflammable.
1711. J. E. Melon de Pradou and L. G. Lecocq, 4, South-street, Finsbury—Imp. in apparatus for lighting.
1712. R. Lakin, Ardwick, and J. Wain, Manchester—Imp. in certain machines used in preparing to be spun, and in spinning cotton, wool, and other fibrous substances.
1713. W. England, Wollaston Works, near Stourbridge—An imp. or imps. in the manufacture of bricks.
1714. L. Roughton, Bedford place, Old Kent road—Improved apparatus for extinguishing fires.

Dated 6*th July*, 1861.

1715. J. Dean, Derby—Imp. in machinery or apparatus for propelling vessels.
1716. J. R. Black, 23, Sumner-place, Onslow-square, and H. W. Spratt, Walbrook-buildings—Imp. in the manufacture of boxes, cases, tubes, rings, and such like articles and machinery for the same.
1717. R. A. Smith, 20, Devonshire-street, Manchester—Imp. in purifying gas.
1718. T. Wilson, Birmingham—An imp. or imps. in moveable spanners or screw wrenches.
1721. T. Smith, 4, Bolton-place, Upper Church-street, Fulham-road—Imp. in the construction of bells.
1723. J. Ridsdale, 4, Stoke Newington-green—Imp. in inkstands applicable to the stoppers of bottles.
1725. C. Farrow, 18, Great Tower-street—Imp. in apparatus for affixing or applying capsules to the necks of bottles and other vessels.
1726. A. Noble Bristol—Imp. in obtaining products from alkali waste and gas lime refuse.
1727. E. R. Handcock, 23, Norfolk-street, Strand—Imp. in machinery for obtaining and applying motive power.
1728. G. Tutill, 83, City-road—Imp. in treating materials for the manufacture of banners and flags.

Dated 8*th July*, 1861.

1729. J. Snider, jun., Paris, No. 13, Rue Gaillon—A method of utilizing old or smooth bore cannon by strengthening and rifling them so as to render them efficient to fire elongated or cylindro-conoidal projectiles.
1730. F. Warner, Jewin-street, and T. Clark, Baldwin-street, City-road—Imp. in apparatus for supplying water to water closets.
1731. R. Hornsby, jun., Grantham—Imp. in machinery for washing, wringing, mangling, and churning.

Dated 9*th July*, 1861.

1733. T. T. Macneill, 23, Cockspur-street—Imp. in the construction of barometers, and in apparatus for registering the indications of the same.
1737. E. A. Penley, Cheltenham—Imp. in the construction of drawing boards.
1738. F. S. Barff, Dublin—A new or improved process for the induration or preservation of stone and other analogous absorbent substances or materials, which process is also applicable to the production of artificial stone.
1739. W. C. Parkinson, Cottage lane, City-road—An improved frictionless bearing for gas meters.
1740. J. Keats and G. E. Keats, Leek, Staffordshire—Imp. in sewing machinery.
1741. C. Cochrane, Middlesborough-on-Tees—Imp. in treating gas in its passage from blast furnaces to the furnaces, stoves, boilers, or other heating apparatus where the gas is employed.
1742. R. Hornsby, jun., Grantham—Imp. in thrashing machines.
1743. J. German, 32, Friar-gate, and G. N. Browne, Keddleston-road, Derby—Imp. in apparatus to be used in shampooing.

Dated 10*th July*, 1861.

1744. R. T. Chellingworth, 12, Buckingham-street, Adelphi, and J. Thurlow, 37, Belvidere-road, Lambeth—Imp. in traction engines.

Dated 11*th July*, 1861.

1746. G. Weston and J. Weston, Sheffield—Imp. in rotary steam engines and pumps.
1750. J. Farron, Ashton-under-Lyne—Imp. in apparatus and fittings connected with steam engines and boilers.
1752. T. Reeves, jun., Bratton Westbury, Wiltshire—Imp. in apparatus for applying salt or other material to the roots of weeds.
1754. T. G. Messenger, High-street, Loughborough—Imp. in the construction of valves.

Dated 12*th July*, 1861.

1758. J. Adams, King William-street—Imp. in revolving fire-arms, and in cartridges for the same.

Dated 13*th July*, 1861.

1762. C Maschwitz, Birmingham—Imp. in taps or stop-cocks for liquids, steam, and gas. (A com.)
1764. J. Pickering, Clitheroe, H. Pickering, Burnley, and N. Pickering, Wingates, Westhoughton, Lancashire—Imp. in self-acting mules for spinning cotton and other fibrous materials.

Patents Sealed.

[*From Gazette, July* 26*th*, 1861.]

July 26*th*.
230. W. Winstanley, J. Kelly, W. Payne, & J. Formby.
233. W. F. Fleming.
234. J. W. Friend.
343. S. T. Crook.
245. W. Archer.
246. Ephraim Smith.
247. J. Poole.
258. J. Robertson.
266. R. Kuntsmann.
270. W. Hart.
278. E. T. Hughes.
625. A. J. Joyce.
763. W. Spence.
1385. H. Allman.

[*From Gazette, July* 30*th*, 1861.]

July 30*th*.
257. R. D. Clegg.
263. J. Chatterton.
269. A. Crichton.
275. H. Bessemer.
279. W. Prangley.
280. J. Cameron.
285. W. N. Wilson and W. T. Rowlett.
288. D. Walmsley & J. Rostron.
298. W. Paton.
301. J. Leeming.
303. E. T. Hughes.
338. M. A. F. Mennons.
339. M. A. F. Mennons.
349. G. G. Aggio.
437. J. H. Johnson.
565. W. E. Newton.
707 M. A. F. Mennons.
735. J. H. Johnson.
854. J. H. Johnson.
897. W. E. Newton.
993. E. D. Bourne and P. Davis.
1005. J. D. Samuda.
1800. J. R. Chesneau.
1310. R. Mushet.
1370. M. Burke.
1393. M. A. F. Mennons.
1461. J. Howard and E. T. Bousfield.
1483. R. Romaine.

Patents on which the Stamp Duty of £50 has been Paid.

[*From Gazette, July* 22*nd*, 1861.]

July 22*nd*.
1652. B. Blake.
1662. H. Barber.
1679. J. Taylor and J. Nimmo.
July 24*th*.
1946. W. E. Newton.
1979. W. Rose.
1980. A. V. Newton.

[*From Gazette, July* 30*th*, 1861.]

July 25*th*.
1684. H. Jackson.
July 26*th*.
1694. C. N. Kottula.
1711. J. Musgrave.
July 27*th*.
1696. G. Hurn.
1698. A. Pougault.

Patents on which the Stamp Duty of £100 has been Paid.

[*From Gazette, July* 30*th*, 1861.]

July 25*th*.
1627. F. Preston.
1661. A. Law.
July 26*th*.
1750. W. H. Clabburn.